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Effects of atomic radiation

Impact of the increase in the membership of the United Nations Scientific Committee on the Effects of Atomic Radiation, and possible approaches to further increases

Report of the Secretary-General

Summary

The present report has been prepared pursuant to paragraph 18 of General Assembly resolution 66/70, in which the Assembly requested the Secretary-General to report to it at its sixty-ninth session "on the experience of the increase in the membership of the Scientific Committee to 27 States regarding its effectiveness, quality of work and equitable geographical distribution, as well as on options for further increase procedures".

The General Assembly has increased the membership of the Scientific Committee only three times since it was created in 1955: in 1974, in 1986 and in 2011. Overall, the period considered (2012-2014) was too short to draw firm conclusions on the impact of the latest increase in membership to 27 States on the effectiveness and quality of the Committee's work. Moreover, the number of States members of the Committee has almost doubled since its creation, yet the geographical distribution has remained essentially stable.

Because the Committee is scientific in nature, changing membership is not the most pertinent means to enhance the effectiveness and quality of the Committee's work. Access to data from and links to institutions in Member States of the United Nations at large that can provide the Committee with the necessary expertise and data are much more important. The secretariat has envisaged possible changes to the management and organization of the Committee that could include soliciting contributions from more scientists and institutions. To achieve this, the Committee has decided to set out, at its sixty-second session, long-term strategic directions to help inform future deliberations of the Assembly on the Committee's membership.

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I. Introduction

1. The General Assembly, in its resolution 66/70 of 9 December 2011, requested the Secretary-General to report to it at its sixty-ninth session "on the experience of the increase in the membership of the Scientific Committee on the Effects of Atomic Radiation to 27 States regarding its effectiveness, quality of work and equitable geographical distribution, as well as on options for further increase procedures". The present report is submitted in response to that request.

II. Background

2. The General Assembly, in resolution 913 (X) of 3 December 1955, established the Scientific Committee and tasked it with making broad scientific assessments of the sources of ionizing radiation and its effects on human health and the environment.

3. Since 1955, the Committee has played an important role in improving international scientific understanding of the levels and trends of exposure to ionizing radiation, for example, in medicine, research, agriculture and industry and from nuclear power production, as well as of exposure to natural sources of radiation. Notable examples include the Committee's evaluations of the levels of exposure from atmospheric weapons testing, and from the accidents at the Chernobyl and Fukushima Daiichi nuclear power stations.

4. The Committee has also fostered an international consensus on the state of knowledge of the health and environmental effects of radiation exposure. That scientific consensus is fundamental to the international framework for radiation safety, underpinning the international standards for protecting the public, workers and patients against ionizing radiation. Member States then use those international standards to develop important programmes and enact legislation in the field of radiation protection. The Committee's reports, with their detailed scientific annexes, also serve as important references for the scientific community.

5. Governments, international organizations and the scientific community hold the Committee in high regard for its valuable contribution to wider knowledge and understanding in this highly specialized field, and for its scientific authority and independence of judgement. The General Assembly has reaffirmed its decision to maintain the current functions and independent role of the Scientific Committee.

6. The United Nations Environment Programme (UNEP) has the organizational responsibility for servicing the Committee, and provides it with a secretariat, located in Vienna. The secretariat arranges the annual sessions and, in accordance with the Committee's requests, coordinates the drafting of several detailed and highly specialized documents based on scientific and technical information obtained from Member States of the United Nations at large and the scientific literature.

7. In recent years more than 100 scientific advisers from the 27 States members of the Committee and observers from international organizations have scrutinized the scientific content of technical documents in preparation for the annual sessions. The work is divided between two informal subgroups, one responsible for analysing the levels of radiation exposure, and one responsible for assessing the effects of

exposure on human health. The first subgroup consists of specialists in dosimetry and statistics, the second is highly specialized and requires experts of world standing in fields such as radiobiology and epidemiology.

8. In the last decade or two, new challenges have arisen owing to the marked acceleration of global communications and of specialized scientific developments, such as the rapid development and implementation worldwide of new practices and techniques in medical uses of radiation, and in molecular biology and genetics. This important trend is likely to continue. Moreover, there is growing interest in the Committee's work, in part because of renewed consideration of nuclear power in response to concerns about energy security and global warming (tempered by apprehension about the human and environmental impact of accidents and of radioactive waste); threats related to nuclear and radiological weapons; new applications of radiation in medicine, research, agriculture and industry; and an evolving understanding of the effects of radiation at low rates of exposure, including the fact that those effects depend on age, sex, lifestyle and genetic factors.

9. The Assembly decided to enlarge the Committee three times from the original 15 members of 1955: in 1973, in 1986 and most recently in December 2011 (see A/66/254, sect. III),[1] when in resolution 66/70 the Assembly decided to increase the membership from 21 to 27 States, on the understanding that the increase could be achieved using existing resources for the biennium 2012-2013. It also requested the Secretariat and Member States to use the budget and the meeting time allocated to the Scientific Committee in the most efficient manner in order to avoid additional expenditure caused by future increases in membership.

III. Impact of the increase in the membership of the Scientific Committee to 27 States

10. The General Assembly has requested a report on the impact of the increase in the membership of the Committee to 27 States on its effectiveness, quality of work and equitable geographical distribution.

11. Since the Assembly's decision in December 2011 to increase the membership, the Committee has held three sessions. It is difficult, over this relatively short period, to use completely objective criteria to assess the impact of the increase on the effectiveness and quality of the Committee's work. Moreover, the Committee's programme of work over the period was atypical, as it was dominated by its assessment of the levels and effects of exposure to radiation due to the nuclear accident after the great east-Japan earthquake and tsunami. Nevertheless, it has also conducted evaluations on the effects of radiation exposure on children, on attributing health effects to radiation exposure and inferring risks, and on uncertainties in risk estimates for cancer due to exposure to ionizing radiation.

12. Clearly, a change in membership offers opportunities, but also raises some challenges. The present report illustrates how the increase in membership has affected the effectiveness and quality of the Committee's work. The report then provides commentary on other less quantifiable aspects, and an overall assessment

[1] See A/66/524, sect. III, for a more detailed history of the changes in membership.

of the experience thus far. That is followed by a discussion of equitable geographical distribution.

A. Effectiveness

13. As a rule, the United Nations has covered travel costs for the representatives of each State member to attend the Committee's annual session in Vienna.[2] The secretariat had previously forecast that the travel costs for each additional member would amount to $5,300 for the biennium[3] ($15,900 per annual session for six additional members). Table 1 presents the cost of travel for representatives for the period 2010–2014. The average travel costs (including in-kind contributions) per session amounted to $65,550 for the period 2010-2011 (21 members) and are $74,400 for the period 2012-2014 (27 members). This comparison shows that, since membership was increased from 21 to 27 in 2012, the additional cost has been $8,900 for the sessions with six new members. Since 2006, the secretariat has requested States members of the Committee to nominate their representatives no later than about six weeks before the annual session. That practice has enabled the secretariat to secure better rates for travel. Particularly in 2014, favourable airfares resulted in considerable savings. However, travel costs have been fluctuating over the period concerned, mainly owing to rapidly changing and complex airline pricing or force majeure causing re-bookings at short notice. Moreover, a few States members have made in-kind contributions by arranging their representatives' travel at no cost to the United Nations. It was thus possible to absorb the extra cost of travel for the six new representatives using the existing resources for the biennium 2012-2013. The secretariat expects that by continuing the practice of early nomination of representatives, and in anticipation of continuing in-kind contributions from some States, the Committee will stay within its travel budget for representatives.

Table 1
Cost of travel for representatives in the period 2010-2014
(Thousands of United States dollars)

Session	*Members*	*Expenditure*	*In-kind contributions*	*Total cost (actual + in-kind contributions)*	*Allocation (initial)*
Fifty-seventh session (2010)	21	60 600	7 300	67 900	78 400
Fifty-eighth session (2011)	21	56 700	6 500	63 200	75 600
Fifty-ninth session (2012)	27	65 900	6 500	72 400	82 700
Sixtieth session (2013)	27	72 900	13 000	85 900	79 600
Sixty-first session (2014)	27	52 900	12 000	64 900	83 600

[2] See ST/SGB/107/Rev.6.
[3] See A/66/524, table 4.

14. Table 2 shows average numbers of delegates (comprising representatives, alternates and advisers) from States members of the Committee for its last five annual sessions. It includes an average for the two years (2010-2011) when there were 21 States members (the pre-existing members) and an average for the three years (2012-2014) when there were 27 members (the 21 pre-existing members and the 6 new members). Observers and international organizations are not included. There were on average 37 more delegates for the period 2012-2014 than for the period 2010-2011, an increase of 41 per cent. That included 17 more delegates from the 21 pre-existing members, almost certainly a result of delegations' heightened interest in the Committee's deliberations on the accident at the Fukushima Daiichi nuclear power station. The other 20 extra delegates were from the six new members, somewhat fewer than the number (24) that had been forecast by the secretariat based on the number of States members alone.[4]

15. In order to accommodate the additional participants at the annual sessions (regardless of whether their attendance was due to the increase in membership or to the heightened interest in the Committee's deliberations), larger rooms for the Committee's plenary and for meetings of technical subgroups were required. Those changes were accommodated by the Conference Management Service in Vienna. The plenary room had to be changed from the more collegial, round-table format to a more distant classroom-style format. However, the meetings of the technical subgroups continue to be convened in collegial style, albeit in larger rooms; the collegial format is preferred by the Committee. Additional photocopying and printing costs for the enlarged Committee were offset by a decline in the numbers of documents printed and an increase in the use of electronic means.

Table 2
Average numbers of delegates from States members to the last 5 sessions of the Scientific Committee

Average number of delegates	*Fifty-seventh and fifty-eighth sessions (2010-2011)*	*Fifty-ninth, sixtieth and sixty-first sessions (2012-2014)*
From the 21 pre-existing States members	90	107
From the six new States members	-[a]	20
Total (excluding observers and international organizations)	90	127

[a] The six new States members sent observers to the fifty-seventh and fifty-eighth sessions.

16. The Committee's evaluation of the levels and effects of exposure to ionizing radiation following the 2011 accident at the Fukushima Daiichi nuclear power station was a major element in the Committee's programme of work over the period under consideration. It required special ad hoc arrangements for securing and managing relevant expertise to obtain, review and analyse data, conduct the study, and write and review the report. In total, 18 of the 27 States members provided some 77 experts, 66 from 13 of the 21 pre-existing States members and 11 from five of the six new members.

[4] See A/63/478, para. 4.

17. With regard to providing formal written comments on drafts of the report between the annual sessions, 19 of the 27 States members provided a total of 1,861 comments. Of these, 15 of the 21 pre-existing States members provided 1,755 comments, and four of the six new States members provided 106 comments. While there was more work for the secretariat and Committee owing to the evaluation of the accident at the Fukushima Daiichi nuclear power station, these figures imply that the work also grew to some degree because of the increase in membership of the Committee.

18. Most of the new States members of the Committee have contributed actively to the sessions and to the work between sessions. It would also appear that the past discussions on membership to some degree triggered a reawakening of interest and increased contributions from some pre-existing members, including the fostering by some States of better networks of expertise to support their delegations. Nevertheless there is still scope for some States members (at least one pre-existing and one new) to enhance their contributions to the work, perhaps by improving the scientific support to their representatives, or selecting the representative with more appropriate qualifications.

19. Technical documents at the last three sessions have apparently required lengthier discussions than they did prior to 2011. This may partly be the result of the changes made to the timetable to ensure the completion of high-priority work (such as the radiological assessment of the Fukushima Daiichi nuclear power accident, and of the evaluation of the effects of radiation exposure on children), though it may also partly be ascribed to slower progress as a result of having more delegates.

20. Before the change in membership in 2011, the delegations to the Committee had a more implicit understanding and experience of the tradition of scientific approaches and working arrangements for the sessions of the Committee, and were more aware of its earlier reports. This has not been the case for the six new members, nor indeed for some pre-existing members that recently replaced their representatives or made other changes to their delegations. Moreover, there was an apparent tendency to raise more procedural matters, possibly as a result of the change in membership. In addition, a few States members did not have a clear understanding of the criteria for selecting new representatives. It was important for the sake of Committee's effectiveness to manage these tendencies.

21. As previously foreseen,[5] more formal arrangements were needed to clarify these matters for the new States members, but formal arrangements were also needed in a more general sense. The officers of the Committee and the secretariat have recently fostered the agreement of the Committee on governing principles, which outline some of the basic operational arrangements of the Committee, and on the principles of ethics in science on which the Committee's scientific evaluations are to be based. In addition, terms of reference for the Committee's Bureau, a written communications policy and arrangements for declaring conflicts of interest have been developed. It is expected that further policies and procedures will be needed in the future. While this increases the workload for the secretariat, the development of such arrangements will facilitate the operations of a larger Committee if there are further changes to the membership in the future.

[5] See A/63/478, para. 45.

22. Overall, the period considered (2012-2014) was too short to gain sufficient experience allowing firm conclusions to be drawn on the impact of the increase in membership to 27 States on the effectiveness of the Committee in the long term. The cost increase for travel of representatives ($8,900 between the periods 2010-2011 and 2012-2014 for all six additional members) and the additional post for the secretariat granted in 2011 have allowed the enlargement to be managed relatively easily.

B. Quality of work

23. It is even more difficult to assess objectively the impact of increased membership on the quality of the Committee's work. Some examples can serve to provide insight into the matter.

24. When considering the formal written comments on the Committee's assessment of the accident at the Fukushima Daiichi nuclear power station, some of the comments from the six new members reinforced comments from the 21 pre-existing members, while some were novel and helped improve the quality of the report.

25. In implementing the special ad hoc arrangements needed to manage the large number of experts put at the Committee's disposal to conduct the Fukushima assessment, it became clear that there was no common understanding of: (a) the approaches needed to ensure quality of data, analysis, and reporting; (b) the need for standard and consistent terminology; and (c) the need to write succinctly, clearly and precisely. This was relevant to experts both from the six new States members and the pre-existing members. One problem with a larger Committee is that the implicit care taken and responsibility of drafters for accuracy and quality has been more and more perceived as a shared responsibility of the Committee and the secretariat. This trend undermines efficiency, and formal procedures and arrangements for ensuring quality, consistent terminology and improved guidance for writers need to be developed. It would be premature to consider further expansion of membership until such arrangements are in place and functioning properly.

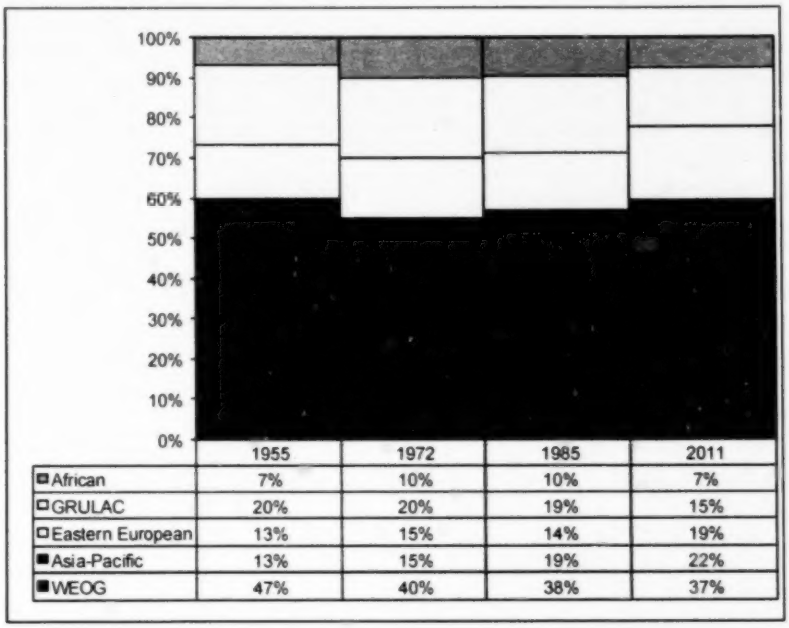
26. Overall, the period considered (2012-2014) was too short to gain sufficient experience allowing firm conclusions to be drawn on the impact of the increase in membership to 27 States on the quality of the Committee's work in the long-term. Any impact during this period has been marginal.

C. Equitable geographical distribution

27. To provide insight into the effect of the Committee's enlargement on its equitable geographical distribution, the changes in the distribution of Committee members among the five United Nations regional groups are summarized in the figure. This shows that there has been no dramatic change.

Figure

Distribution of States members of the Committee among the regional groupings



	1955	1972	1985	2011
African	7%	10%	10%	7%
GRULAC	20%	20%	19%	15%
Eastern European	13%	15%	14%	19%
Asia-Pacific	13%	15%	19%	22%
WEOG	47%	40%	38%	37%

28. Geographical distribution of membership has never been explicitly expressed as a consideration in the mandate of the Committee, either under its founding resolution, resolution 913 (X), or any subsequent resolutions of the Assembly on the effects of atomic radiation. While equitable geographical distribution is a principle of the United Nations, consideration of equitable geographical distribution of membership perhaps ought not to be based solely on political groupings, but also on the extent to which it will help the Committee to fulfil its scientific objectives.

29. In the early days of the Committee, when the major concern was the testing of nuclear weapons in the atmosphere, it was important for both scientific and political reasons that the membership cover the globe. Soon concern shifted to global levels of and trends in exposure to radiation, and the focus of the Committee's assessments changed accordingly. Today the secretariat manages surveys of all United Nations Member States.[6] The work is organized in two informal subgroups, one analysing the levels of radiation exposure worldwide and the other studying the effects of radiation exposure. There will continue to be merit in having countries in the first subgroup that can contribute data on radiation exposure from various sources, and for major populations, land areas and environments around the world. Here, equitable geographical distribution would help to ensure broad acceptance of the Committee's evaluations and findings.

[6] The latest of these is the Committee's Global Survey of Medical Usage and Exposures.

30. With regard to the second subgroup, which studies the effects of radiation exposure, geographical distribution is less relevant. If the Committee is to maintain its credibility as the world's leading authority on the health effects of radiation exposure, it must be able to rely on a team of top-level experts in radiobiology, radio-epidemiology, genomics, molecular biology, immunology and similar, highly specialized fields. What matters is not so much the experts' geographical origin but their standing in the scientific community. They require the assistance of professionals with advanced degrees in these fields and should be able to perform their task without unnecessary distractions.

31. Thus, it is not clear what constitutes "equitable" geographical distribution and how it has been affected by the increase in membership under resolution 66/70. In addition, it is not clear whether equitable geographical distribution should be applied within the political groups, let alone between them. For example, from a purely geographical perspective, it is noteworthy that there is no representation of any country from sub-Saharan Africa.

32. Overall it is possible to conclude that, over the nearly 60 years of the Committee's existence, it has almost doubled in terms of States members, yet the geographical distribution has remained essentially stable.

IV. Possible approaches to further membership increases

33. The General Assembly, in its resolution 66/70, decided to next consider reviewing the possible increase in the membership of the Scientific Committee at its seventy-second session, taking into account new expressions of interest in membership received by the Secretary-General between the sixty-sixth and seventy-second sessions of the General Assembly, all previous resolutions of the Assembly and, as appropriate, all relevant reports of the Secretary-General on the Scientific Committee as well as the principle of equitable geographical distribution and the need to ensure the effectiveness and the quality of work of the Scientific Committee, with a view to establishing a procedure at the seventy-third session for the possible further increase in the membership.

34. Neither the Committee's founding resolution 913 (X), nor any other General Assembly resolution provides explicit guidance on how proposed increases in the Committee's membership should be handled. The enlargements of 1974, 1985 and 2011 were each handled in a different way.[7] It was not explicitly stated, but it would appear that the five new members admitted in 1974 were chosen so that one came from each of the political groups. In 1985, when China was admitted, the reason given was simply that China could contribute significantly to the work of the Committee. The first process was straightforward. The second was apparently ad hoc but simple. The process initiated in 2005 was far from optimal. There were delays in resolving the budgetary implications, delays in reaching agreement about the process and criteria for assessing the candidates' capacity to contribute to the Committee's work, some frustration on the part of the candidate countries, and considerable time expended by the secretariat, the Committee and the Assembly.

[7] See A/66/524, sect. III.

The development of a clear agreed process is highly recommended to avoid such problems in the future.

35. While acknowledging the possible aspirations of many United Nations Member States to become members of the Committee, the primary purpose of any increase should be to enhance the capability of the Committee to conduct its scientific work.

36. In 2010 the Committee expressed its concerns about a potentially large increase, and made proposals that were alternatives to increasing the membership.[8] It proposed the engagement of experts from other States, as appropriate, in drafting the session documents,[9] the invitation of experts as observers for specific agenda items, and bilateral arrangements under which some countries would send their experts as part of another country's delegation.[10]

37. The secretariat could envisage other options that would involve reconfiguring the Committee's organization. For example, it could envisage formalizing the two subgroups, one on levels of exposure, and one on effects of exposure. One could argue that a working group on levels of exposure might benefit from a larger, geographically balanced membership covering expertise on various sources of exposure and having access to exposure data worldwide. A working group on the effects of exposure, on the other hand, would be more effective as a smaller group that had the highly specialized scientific knowledge and expertise it needed, and that had access to the results of the relatively few specialized research programmes available. For both those working groups, the Committee's work would be better served by establishing formal links to relevant scientific and technical institutions in Member States of the United Nations at large, rather than just the States members of the Committee. One could envisage that the Committee itself might then keep more or less the same number of States members as it has now, in order to reach a consensus efficiently on, for example, the exact wording of findings of evaluations reported to the Assembly, or the future programme of work. The secretariat could also envisage new ways of working that could involve virtual participation in the Committee's work; this might dramatically affect the desired organizational structure. One element might be to build on the arrangements recently initiated with regard to its coming surveys (i.e. that all Member States of the United Nations identify a national contact person to facilitate coordination of data collection and submission within their country), and to establish specialized networks.

38. It would therefore be appropriate to consider these and other creative approaches, such as rotating membership or limiting the size of delegations, in combination with the Committee's expected needs and constraints in terms of budgetary requirements and operational factors. The Committee has already decided to set out, at its sixty-second session, long-term strategic directions beyond the

[8] See A/65/46/Add.1.

[9] For the Committee's recent evaluation of the Fukushima accident, a State that was not a member of the Committee contributed its expertise while a component of the evaluation was being prepared.

[10] This practice is already used by two States members of the Committee. The Netherlands and the Czech Republic regularly contribute advisers to the delegations of Belgium and Slovakia respectively.

period covered by its present strategic plan (2014-2019), so as to help inform future deliberations of the Assembly on the Committee's membership.[11]

39. Some of the obstacles to a change in membership or configuration would be financial in nature or related to available accommodation at the present conference facilities. Those might be addressed by altering the rules for funding the travel of representatives to the annual session and by limiting the size of delegations attending those sessions, provided that this did not adversely affect the participation of the best experts. It may also be appropriate to consider requesting all States members to reconfirm their willingness to contribute to the work of the Committee before making changes to the membership. This would allow for the possibility of States whose national priorities have changed withdrawing from the Committee and thus freeing up capacity so that other States could be admitted as members.

40. It is obvious that the Committee can optimally be enlarged only up to a certain point, beyond which any further members would bring only marginal benefit. This is borne out by studies showing that decision making becomes less effective beyond seven participants, while for information, review and presentation meetings a group should have about 30 members to promote interaction and participation. Moreover, there is a limit to the number of States members with which the Committee's secretariat at its present size could reasonably cope — perhaps about 30 — without affecting its ability to support the substantive scientific work of the Committee. Significantly more than that would require further strengthening of the secretariat's human resources. All this indicates that more thought should be given to efficient management structures rather than membership per se.

41. The past increases in membership were 17, 13 and 26 years apart. The latest increase effectively took five years to finalize; the first invitation to States to express their interest was made in 2006, and the invitation to join the Committee was confirmed in 2011. Given the burden placed on the Secretariat and Committee during this time, it is not recommended that changes in membership be considered more frequently than every 10 years in the long term. On the other hand, it is almost certain that there will be changes in circumstances over a period of 20 years and thus that it will be appropriate that membership be considered at a frequency of not more than 20 years.

42. It would appear premature to consider procedures for increasing membership in any detail before considering and agreeing on any change in the Committee's configuration to enhance the effectiveness and quality of the Committee's work. Key issues to decide in developing any procedures would include:

(a) When and how often further changes in membership should be considered;

(b) The maximum size of the Committee's membership;

(c) The process by which aspirant Member States should express their interest;

(d) How and by whom the decision and/or recommendations on membership changes should be made;

[11] See A/69/46.

(e) The criteria to be used in making such decisions and/or recommendations.[12]

V. Conclusions

43. Overall, the period considered (2012-2014) was too short to gain sufficient experience allowing firm conclusions to be drawn on the impact of the increase in membership to 27 States on the effectiveness and quality of the Committee's work in the long term. Moreover, over the nearly 60 years of the Committee's existence, while the number of States members has almost doubled, the geographical distribution has essentially remained stable.

44. Because the Committee is scientific in nature, it needs experts of worldwide standing in the relevant fields. Enlarging the Committee is therefore not the most pertinent means to enhance the effectiveness and quality of its work. What matters much more is whether the Committee has access to the data and expertise that institutions in Member States of the United Nations at large can provide. Consideration of this issue would open up more opportunities to enhance the work and reputation of the Committee. The secretariat can envisage changes to the Committee's management and organization that could effectively involve more specialized scientists and institutions from many Member States, which could contribute markedly to the Committee's work. Such an approach would require more flexibility than currently exists, given that membership has to be negotiated formally in the General Assembly. The Committee has decided to set out, at its sixty-second session, long-term strategic directions beyond the period covered by its present strategic plan (2014-2019), so as to help inform future deliberations of the Assembly on the Committee's membership.

[12] See A/66/524.